

CLAIMS:

1. A guest-host polarizer comprising an oriented polymer film including an oriented polymerized liquid crystal host and a dichroic light-absorbing guest dispersed and oriented in the host, the oriented polymer film having a dichroic ratio of about 15 or more.
- 5 2. A guest-host polarizer as claimed in claim 1 wherein the oriented polymerized liquid crystal host is obtained by polymerizing an oriented polymerizable liquid crystal.
3. A guest-host polarizer as claimed in claim 1 or 2, wherein the orientation of the oriented film is or corresponds to the orientation of a smectic phase S_X wherein X is not
10 A or C.
4. A guest-host polarizer as claimed in claim 1, 2 or 3 wherein the oriented polymer film has a film thickness of about 10 μm or less.
- 15 5. A guest-host polarizer as claimed in claim 1, 2, 3 or 4, wherein the dichroic light-absorbing guest is a blue absorbing dichroic colorant and the polarizer further comprises a thin film obtained from a perylene-based, naphthalene-based or anthraquinone-based lyotropic liquid crystal or combination thereof.
- 20 6. A liquid crystal cell comprising a substrate, a liquid crystal layer and a guest-host polarizer as claimed in claim 1, 2, 3, 4 or 5.
7. The liquid crystal cell of claim 6 wherein the guest-host polarizer is arranged between the liquid crystal layer and the substrate.
- 25 8. A liquid crystal cell as claimed in claim 7 wherein at least one of a compensation layer, a retarder layer, a color filter layer and a viewing angle layer or other optical layer is arranged between the substrate and the liquid crystal layer.

9. A polymerizable liquid crystal for use in the manufacture of an oriented polymer film, the polymerizable liquid crystal having a smectic phase S_X where X is not A or C, with the exception of trans-1-[4-[6-(acryloyloxy)hexyloxy]cyclohexanecarboxyl]-4-[4-[6-(acryloyloxy)hexyloxy]benzoyloxy]benzene.

10. A polymerizable liquid crystal as claimed in claim 9, wherein the polymerizable liquid crystal is one of the formula I

10 U-V-W-X-Y-X'-Y'-X''-W'-V'-U' (I)

wherein

X, X' and X'' are each, independently of one another, Ph or Cyc;

where Ph is a 1,4-phenylene unit and Cyc is a trans 1,4-cyclohexylene unit;

Y, Y' are each, independent of one another, -CH₂CH₂-, -CH₂O- or -OCH₂-, -
15 OCO-, -COO-, -, -N=N-, -C=C-, -C≡C-, -C=N-; U, U' are each, independent of one another, a polymerizable group or U is a polymerizable group and U' = H or U = H and U' is a polymerizable group;

V, V' are each, independent of one another, a spacer; and

W, W' are each, independent of one another, a direct bond, -O-, -S-, -COO-,
20 or -OCO-;

with the proviso that if X, X' and X'' are each Ph then Y' is -CH₂CH₂-, -CH₂O- or -OCH₂- and/or at least of one X, X' or X'' is Ph..

11. A polymerizable liquid crystal as claimed in claim 10, wherein X is Ph, X' is
25 Ph and X'' is Cyc or X is Ph, X' is Cyc and X'' is Ph.

12. A polymerizable liquid crystal as claimed in claim 11, wherein X, X' and X'' are each, independently of one another, Ph and Y' is -CH₂CH₂-, -CH₂O- or -OCH₂-.

30 13. A polymerizable liquid crystal thin film forming composition comprising a polymerizable liquid crystal as claimed in claim 9, 10, 11 or 12 and at least one of a polymerization initiator, a photo-initiator, a polymerization inhibitor, a preservative and a surfactant for adjusting the tilt angle adopted by the polymerizable crystal at a surface when a thin film is formed on such surface.

14. An oriented polymer film including a polymerized liquid crystal obtainable by polymerizing an oriented polymerizable liquid crystal as claimed in claim 9, 10, 11 or 12 or trans-1-[4-[6-(acryloyloxy)hexyloxy]cyclohexanecarboxyl]-4-[4-[6-(acryloyloxy)hexyloxy]benzoyloxy]benzene or obtained from the composition of claim 13.
15. A method of manufacturing a guest-host polarizer comprising an oriented polymer film including an oriented polymerized liquid crystal host and a dichroic light-absorbing guest dispersed and oriented in the host, the oriented polymer film having a dichroic ratio of about 15 or more, the method comprising:
- providing a thin film of a polymerizable liquid crystal host and, dispersed therein, a dichroic light-absorbing guest;
 - orienting the polymerizable liquid crystal host and the dichroic light-absorbing guest to obtain an oriented thin film of oriented polymerizable liquid crystal host and a dichroic light-absorbing guest dispersed and oriented in the host, the oriented thin film having a dichroic ratio of about 15 or more;
 - polymerizing the polymerizable liquid crystal host in the oriented state to obtain an oriented polymer film including an oriented polymerized liquid crystal host and a dichroic light-absorbing guest dispersed and oriented in the host, the oriented polymer film having a dichroic ratio of about 15 or more.